CLAIMS

- 1. A method of identifying an agent that modulates bone formation comprising:
 - (a) administering a test agent; and
 - (b) monitoring expression of $\Delta FosB$ to determine whether the agent modulates bone formation.
- 2. The method of claim 1, wherein the agent is administered to isolated cells in culture.
 - 3. The method of claim 2, wherein the cells are osteoblasts or chondrocytes.
- 4. The method of claim 3, wherein the cells are primary osteoblasts, MC3T3-E1 cells, or C2C12 cells.
- 5. The method of claim 1, wherein the agent is administered to a non-human transgenic animal.
 - 6. The method of claim 5, wherein the transgenic animal is a mouse.
- 7. The method of claim 5, wherein the transgenic animal can be induced to overexpress $\Delta FosB$.
 - 8. The method of claim 1, wherein the agent is administered to cell lysates.
 - 9. A method of identifying an agent that modulates adipogenesis comprising,

- (a) administering a test agent; and
- (b) monitoring expression of $\Delta FosB$ to determine whether the agent modulates adipogenesis.
- 10. The method of claim 9, wherein the agent is administered to *in vitro* cells expressing Δ FosB.
- 11. The method of claim 10, wherein the cells are selected from the group consisting of primary adipocytes and 3T3-L1 preadipocytes.
- 12. The method of claim 9, wherein the agent is administered to a non-human transgenic animal.
 - 13. The method of claim 12, wherein the transgenic animal is a mouse.
- 14. The method of claim 12, wherein the transgenic animal can be induced to overexpress $\Delta FosB$.
 - 15. The method of claim 9, wherein the agent is administered to cell lysates.
- 16. A method of inducing osteoblast formation comprising administering an agent that increases $\Delta FosB$ expression in pluripotent precursor cells.
- 17. A method of inhibiting adipocyte formation comprising administering an agent that increases $\Delta FosB$ expression in pluripotent precursor cells.
- 18. A method of treating osteosclerosis comprising administering an agent that inhibits Δ FosB expression.

- 19. A method of increasing bone formation in a patient comprising administering an agent that induces Δ FosB.
- 20. The method of claim 19, wherein the patient is suffering from bone fracture, osteoporosis, or hyperparathyroidism.
- 21. The method of claim 1 or 9, wherein step (b) is performed using a yeast two-hybrid system.
- 22. The method of claim 1 or 9, wherein the expression of Δ FosE is monitored by measuring expression of a reporter gene whose transcription is regulated by Δ FosB.
 - 23. A method of identifying genes that are modulated by ΔFosB comprising
 - (a) inducing Δ FosB in a cell; and
 - (b) determining which genes are differentially expressed, thereby identifying genes that are modulated by $\Delta FosB$.
- 24. The method of claim 23, wherein step (b) is performed using a yeast two-hybrid system or hybridization of cellular nucleic acids to a DNA chip.
- 25. A method of identifying genes that modulate $\Delta FosB$ expression comprising measuring the expression level of $\Delta FosB$ in the presence of test genes, thereby identifying genes that modulate $\Delta FosB$.
- 26. The method of claim 25, wherein the test genes are in a nucleic acid library.

- 27. The method of claim 25, wherein the expression level of Δ FosB is determined by using Northern blot analysis, Western blot analysis, PCR analysis, or two hybrid screening assays, or a reporter gene system.
- 28. The method of claim 27, wherein the reporter gene system comprises a reporter gene linked to a promoter that interacts with Δ FosB.
- 29. The method of claim 25, wherein $\Delta FosB$ is linked to a heterologous protein.
- The method of claim 25, wherein $\Delta FosB$ is encoded by a nucleic acid on a heterologous vector.